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ABSTRACT

A meta-analysis examines the predictive validity of three methods for evaluating the education and experiences (E&E) of applicants for entry and full-performance level jobs, focusing on federal white-collar jobs. The following are methods of rating education and experience: (1) Point, assigning points to the duration and type of past education and experience; (2) the Knowledge, Skills, and Abilities (KSA) method based on job analysis and comparison with the applicant's KSA; and (3) the Behavioral Consistency method, also based on KSAs from a job analysis, with achievement-based content benchmarks. The sample consisted of 1,399 new Federal Government hires, representing 10 jobs with a substantial number of selections per year. Supervisory ratings of job performance were obtained. The Point method was used to select applicants for three jobs, the KSA for four, and Behavioral Consistency for three. Moderate support was found for the validity of education and experience ratings in predicting full-performance level job performance, but not for entry-level jobs. The Point method was not valid for full-performance or entry-level jobs. Applicant self-assessment might provide a way of measuring the general KSAs required for entry-level trainees' jobs. Attachment A is an example of a job performance rating scale, and Attachment B summarizes the validity of education and experience ratings by job level and rating method. (SLD)

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# Validity of Three E&E Rating Methods for Entry and Full Performance Level Jobs

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Validity of Three E&E Rating Methods for
Entry and Full Performance Level Jobs

Today I would like to talk about the predictive validity of three methods for evaluating the education and experience of applicants for entry and full performance level jobs. This study covers white collar jobs in Federal professional, administrative, technical, and clerical occupations. Typically the job relatedness of these methods has been documented with content validity evidence. Although ratings of education and experience have been in use for many decades, it has only been within the past few years that studies on the criterion-related validity of these methods has been reported in the research literature.

McDaniel, Schmidt and Hunter (1988) conducted a meta-analytic study based on an extensive review of published and unpublished validity research on ratings of education and experience. A typology for classifying methods of rating education and experience proposed by Ash (1981) was used to categorize the validity coefficients in this meta-analytic study. Three of the four categories covered by this meta-analytic research represent methods of rating education and experience described in the present study. I will refer to them as the Point, KSA, and Behavioral Consistency methods.

The Point method includes education and experience ratings that assign points to the duration and type of past education and experience. Benchmarks describing the type of education or experience required for several quality levels is developed by individuals familiar with the job. Typically these benchmarks are used by personnelists to evaluate the education and experience of applicants that is presented on a general application form. In the Federal system points are given for several broad quality levels and are often supplemented with additional points for other specific job related factors. Results from McDaniel's meta-analytic study do not support the validity of the Point method.

The KSA method describes an approach that is based on important knowledges, skills, and abilities obtained from a job analysis. Job applicants are asked to report education and experience that supports each KSA on an occupationally specific supplemental form. Benchmarks against which to evaluate applicant responses are developed for each KSA by those individuals familiar with the occupation. McDaniel's study supports the validity of the KSA method.

The Behavioral Consistency method is also based on knowledges, skills, and abilities from a job analysis. The knowledges, skills, and abilities are combined into several broad achievement dimensions (typically about 5). Applicants are asked to describe past accomplishments related to each dimension. Applicant responses are rated by job knowledge experts and used as

benchmarks in evaluating applicants. McDaniel found substantial support for the validity of the Behavioral Consistency method.

Although sharing some similarities with the KSA method, the Behavioral Consistency approach is distinguished by the content of benchmarks used to evaluate rating factors and by the method used to scale the value of each benchmark. For the Behavioral Consistency method the content of benchmarks is achievement based, while for the KSA method the content is education and experience based. For the Behavioral Consistency method actual applicant achievements are rated by job knowledge experts to form a behavioral anchored rating scale for each rating factor. The KSA method relies on job knowledge experts to construct education and experience benchmarks.

In a review of alternate predictors of job success, Hunter and Hunter (1984) reported that education, training, and experience measures had low mean validities, ranging from .10 to .18, for entry-level jobs. These measures are most closely related to the Point method of education and experience ratings described in this paper. In the same review Hunter reported a mean validity of .49 for Behavioral Consistency ratings of education and experience used for promotion, when current performance on the job was the basis for selection. McDaniel's findings could explain the difference between these validity coefficients in terms of education and experience rating methodology. However, it is also possible that the validity of these education and experience ratings was influenced by the level at which these jobs were filled.

The rationale for using education and experience ratings in personnel selection is based on the general assumption that past job related education, experience, or accomplishments can be used to predict future job performance. This suggests that the closer these past experiences and accomplishments are to actual job performance the higher will be the validity of education and experience ratings. Since employers cannot expect applicants for entry level jobs to have the specific education or experience required to perform the job, it is often difficult to obtain a close match between the content of education and experience ratings and job requirements. It is much easier to identity past experience which relates to full performance level jobs. Therefore, it is reasonable to hypothesize that ratings of education and experience would have higher validity for full performance level jobs than for entry-level jobs. A predictive validity strategy was used to test this hypothesis.

In the present study the type of job (e.g., professional, administrative, technical, or clerical) and the grade level at which it was filled were considered in categorizing jobs as full performance or entry-level. Those jobs which do not require special job related skills and for which training will take place

after hiring were categorized as entry level. Those jobs for which applicants must have specialized education or experience to be able to perform the work with a minimum of training were categorized as full performance level.

New hires for occupations with a substantial number (200) of selections per year, from a single examining office, were identified as potential candidates for the study. Occupations were selected to sample across grade level and the three methods of rating education and experience. The accessibility of selection information was also a consideration and the occupations studied were limited to those covered by examining offices in the Washington, DC. area. For those occupations which met the above criteria, a review of certification files was made to identify those applicants selected for Federal employment.

The criterion measure selected for this study was supervisory ratings of job performance. The rating scales used in the criterion measure were a close adaptation of the six Descriptive Rating Scales used by the U.S. Employment Service in conducting validity studies of the General Aptitude Test Battery (Attachment A). The supervisory rating scales were mailed to agency personnel officers at the locations where appointments had been made. The rating scales were distributed to first line supervisors who were asked to rate the job performance of new hires and mail the completed forms back to the research staff. The procedure was confidential to protect the privacy of research participants and to minimize measurement biases often associated with administrative ratings.

Job performance ratings received from agency supervisors were correlated with ratings of education and experience obtained from applicant certification files. These validity coefficients were corrected for unreliability in the criterion based on research by King, Hunter, and Schmidt (1980) that reported a mean interrater reliability of .60 for supervisory ratings of job performance. Applicant data was not available from the present study or the research literature on education and experience ratings to correct for restriction in range.

Supervisory ratings of job performance were obtained for 1,399 recent hires representing 10 jobs. Four of the jobs were full performance level and six were entry level. The Point method was used to select applicants for three jobs, the KSA method for four, and the Behavioral Consistency method for three. Although the present study did not cover the Point method for full performance level jobs, validity coefficients were obtained from the research literature on this job level and method combination.

Unpublished research by Molyneaux (1953) reported grade level information for Federal jobs included in a predictive validity study of education and experience ratings based on the Point

method . This made it possible to categorize the validity coefficients into full performance level and entry level for the jobs studied. Thirty validity coefficients were categorized for full performance level jobs and 21 for entry level jobs.

There is little evidence to support the validity of the Point method of evaluating education and experience for both the entry and full performance level jobs. Validity coefficients of .02, .04 and .09 were obtained for entry level mathematician, agricultural management specialist, and cartographer education and experience ratings. None of these validity coefficients were statistically significant. Mean validity coefficients computed from the Molyneaux study were also quite low; .04 for full performance level jobs and .13 for entry level jobs.

Results for the KSA method were mixed. At the full performance level statistically significant ($p<.05$) validity coefficients of .41 and .21 were obtained for secretary and dietitian education and experience ratings. However, at the entry level for the same two occupations, validity coefficients of .06 and .08 were not statistically significant. These results suggest that the KSA method may only be valid for full performance level jobs.

Result for the Behavioral Consistency method were consistent with those obtained for the KSA method. At the full performance level statistically significant ($p<.01$) validity coefficients of .25 and .27 were obtained for social worker and pharmacist education and experience ratings. At the entry level the validity of Bank Examiner education and experience ratings was .04, which was not statistically significant.

Table 1 in the handout summarizes the study results (Attachment B). There is no evidence for the validity of the three education and experience ratings described in this paper for predicting entry level job performance. For two methods, KSA and Behavioral Consistency, this study found moderate support for the validity of education and experience ratings in predicting full performance level job performance. Except for the Point method, study results support the hypothesis that ratings of education and experience would have higher validity for full performance level jobs than for entry level jobs.

The lack of validity for Point methods of education and experience ratings at any job level is not surprising considering that these procedures typically use a general application form with credit given for broad types of education and experience. This makes it difficult for education and experience obtained with the Point method to be closely related to job performance. Therefore, the validity of these methods are likely to be quite low. This is not a serious problem with Behavioral Consistency and KSA methods because they use an occupationally specific

supplemental form that obtains applicant information related to each important job requirement.

Although the present study indicates that KSA and Behavioral Consistency methods of rating education and experience are only valid for full performance level jobs, further research is needed to confirm these findings with a larger number of occupations in a variety of settings. Using methods described in this paper it would not be difficult for organizations with centralized examining operations to conduct placement follow-up studies of new hires identified from certification files. Occupations with 100 or more selections per year would be good candidates to study. Results from such studies could give us the data we need to determine how and where education and experience ratings should be applied in personnel selection.

If findings from the present study are confirmed, what do we do about the entry level jobs for which education and experience ratings have been the most practical examining approach? One area that is receiving increasing attention is the use of self-assessment techniques in personnel selection. Applicant self-assessment might be another way of measuring the general KSA's required for entry level trainee jobs. Although there are problems with inflation bias and faking with these procedures, they may prove to be promising alternatives to ratings of education and experience for situations where other selection instruments are not practical to implement.

## References


Ash, R. A. (1981). Comparison of four approaches to the evaluation of job training and work experience. Dissertation Abstracts International, 42, 4606B. (University Microfilms No. DE082-07909).

Hunter, J. E., & Hunter, R, F. (1984). The validity and utility of alternative predictors of job performance. Psychological Bulletin, 96, 72-89.

King, L. M., Hunter, J, E, & Schmidt, F. L. (1980). Halo in a multidimensional forced-choice performance evaluation scale. Journal of Applied Psychology, 65 , 507-516.

McDaniel, M. A., Schmidt, F. L., & Hunter, J. E. (1988). A meta-analysis of the validity of methods for rating training and experience in personnel selection. Personnel Psychology, 41, 283-314.

Molyneaux, J. W. (1953). An evaluation of unassembled examinations. Unpublished master's thesis, The George Washington University, Washington, DC.

ATTACHMENT A

Example of Job Performance Rating Scales

PLACEMENT FOLLOW-UP SURVEY FOR BANK EXAMINER TRAINEE

Instructions for Employee's Supervisor

The U. S. Office of Personnel Management (OPM) is conducting a survey of the quality of placements from the Bank Examiner Trainee examination. This information will be used only for research purposes to evaluate and improve the Federal Government's examining program. These ratings will not effect the employee in any way. Responses to this survey will be treated confidentially by the OPM research staff. No employee, supervisor or organizational unit will be identified in the reporting of survey results.

Our records show that the employee named below was appointed to a Bank Examiner Trainee position in your agency. Your agency has identified you as the employee's supervisor. Please be as accurate and candid as possible in evaluating the job performance of this employee. Use the self-addressed envelope to return the survey form directly to the OPM. Your cooperation is greatly appreciated.

THIS SECTION FOR OPM USE

Social Security Number_____

LAST FIRST M.I. Agency/Location Code_____ / _____
(Employee's Name)

Rating Instructions

Employees who have not completed their training period, or who have not been on the job or under your supervision long enough for you to know how well they can perform their work should not be rated. If this happens to be the case, describe why the employee cannot be rated in the space provided at the top of the next page.

If the employee is no longer on the job, you should rate factors A through F as well as factor G. Do not rate factor G if the employee is still on the job.

In making ratings, do not let general impressions or some outstanding trait affect your judgment. Try to forget your personal feelings about the employee. Rate only on the work performed. Focus on one factor at a time. Try to avoid the same ratings on all the factors. Only one choice should be checked for each factor.

For each factor compare the employee with other employees on this job that you have known. Rate the employee according to the work that has been done over several weeks or months. Do not rate just on the basis of one "good" day, or one "bad" day, or some single incident. Think in terms of the employee's usual or typical performance.

Practice and experience usually improve an employee's skill. However, one employee with six months experience may perform better than another with six years experience. Do not rate an employee poorer than another merely because of a lesser amount of experience.

Rate only the factors listed on the rating sheet. Do not let factors such as cooperativeness, ability to get along with others, and promptness influence your ratings. Although these characteristics of an employee are important, they are of no value for this research study.

If you cannot rate this employee, describe the reason why. _____

_____

What is the employee's present grade? _____

How often do you see this employee in a work situation?

___1. Seldom
___2. Several times a week
___3. Several times a day
___4. All the time

How long have you supervised this employee? Number of months _____

Rating Factors

A. How much does this employee get done? (Employee's ability to make efficient use of time and to work rapidly.)

___ 1. Very low work output. Performs only at an unsatisfactory pace.
___ 2. Low work output. Performs at a slow pace.
___ 3. Good work output. Performs at an acceptable pace.
___ 4. High work output. Performs at a fast pace.
___ 5. Very high work output. Performs at an unusually fast pace.

B. How good is the quality of work? (Employee's ability to do quality work which meets acceptable standards.)

___ 1. Quality of work is unacceptable and hardly ever meets minimum standards.
___ 2. Quality of work is usually acceptable but somewhat inferior.
___ 3. Quality of work is acceptable but usually not superior.
___ 4. Quality of work is usually superior.
___ 5. Quality of work is almost always the highest.

C. How accurate is the work? (Employee's ability to avoid making mistakes.)

___ 1. Makes very many mistakes. Work needs constant checking.
___ 2. Makes frequent mistakes. Work needs more checking than is desirable.
___ 3. Makes mistakes at times. Work is acceptable and needs only normal checking.
___ 4. Makes few mistakes. Work seldom needs checking.
___ 5. Rarely makes a mistake. Work almost never needs checking.

D. How much does the employee know about the job? (Employee's understanding of the principles, equipment, materials, and methods that have to do directly or indirectly with the work.)

___ 1. Has very limited knowledge. Does not know enough to do the job adequately.
___ 2. Has little knowledge. Knows enough to get by.
___ 3. Has acceptable amount of knowledge. Knows enough to do good work.
___ 4. Has very broad knowledge. Knows enough to do very good work.
___ 5. Has complete knowledge. Knows enough to perform all work extremely well.

E. How large a variety of job duties can the employee perform efficiently? (Employee's ability to handle several different operations.)

___ 1. Cannot perform different operations adequately.
___ 2. Can perform a limited number of different operations efficiently.
___ 3. Can perform several different operations with reasonable efficiency; i.e., an acceptable worker.
___ 4. Can perform many different operations efficiently.
___ 5. Can perform an unusually large variety of different operations efficiently.

F. Considering all the factors already rated, and only these factors, how good is this employee? (Summary rating of the employee's all-around ability to do the job.)

___ 1. Performance not acceptable.
___ 2. Performance acceptable at times.
___ 3. A good and proficient worker. Performance nearly always acceptable.
___ 4. Performance frequently exceeds expectations.
___ 5. An unusually competent worker. Performance almost always exceeds expectations.

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Complete the following only if the worker is no longer on the job.

G. What do you think is the reason this person left the job? (It is not necessary to show the official reason if you feel that there is another reason, as this information will not be shown to anyone in your organization.)

___ 1. Terminated because of inability to do the job.
___ 2. Quit, and I feel that it was because of difficulty doing the job.
___ 3. Terminated or laid off for reasons other than ability to do the job (absenteeism, reduction in force, etc.)
___ 4. Quit, and I feel the reason for quitting was not related to ability to do the job.
___ 5. Quit or was promoted or reassigned because the worker had learned the job well and/or wanted to advance.

COMPLETED BY PERSON RATING THIS EMPLOYEE

Name _____ Date _____

Title _____ Series _____ Grade _____

Months as a Supervisor in this field _____ Months in Government _____

Agency/Installation _____

ATTACHMENT B

Validity of Education and Experience Ratings
By Job Level and Rating Method

| JOB LEVEL | Education and Experience Rating Method | | |
|---|---|---|---|
| | Point Method | KSA Method | BC Method |
| FULL PERFOR-MANCE | Molyneaux, 1953<br>30 jobs<br>2,149 hires<br>Mean r = .04 | Secretary<br>GS-6/7<br>r = .41 *<br>(n = 50)<br><br>Dietitian<br>GS-9<br>r = .21 *<br>(n = 109) | Social Worker<br>GS-9/11<br>r = .25 **<br>(n = 205)<br><br>Pharmacist<br>GS-9/11<br>r = .27 **<br>(n = 179) |
| ENTRY | Cartographer<br>GS-5/7<br>r = .09<br>(n = 114)<br><br>Mathematician<br>GS-5/7<br>r = .02<br>(n = 127)<br><br>Ag. Mgmt. Spec.<br>GS-5/7<br>r = .04<br>(n = 201)<br><br>Molyneaux, 1953<br>21 jobs<br>1,595 hires<br>Mean r = .13 | Secretary<br>GS-4/5<br>r = .06<br>(n = 73)<br><br>Dietitian<br>GS-7<br>r = .05<br>(n = 55) | Bank Examiner<br>GS-5<br>r = .04<br>(n = 286) |

* p<.05
** p<.01